CLAIMS

What is claimed is:

1. A method for purifying gellan, comprising:

(a) combining DNase and gellan, the gellan being contaminated with nucleic acid, thereby providing a mixture; and

(b) maintaining the mixture of step (a) under conditions where the DNase degrades at least some of the nucleic acid, thereby providing purified gellan.

2. The method of claim 1 wherein the gellan is contaminated with more than 100 ppm nucleic acid based on the total weight of gellan and nucleic acid.

3. The method of claim 1 wherein the purified gellan is contaminated with less than 10 ppm nucleic acid based on the total weight of gellan and nucleic acid.

4. The method of claim 1 wherein the purified gellan is contaminated with less than 50% of the nucleic acid that contaminated the gellan of step (a).

5. The method of claim 1 wherein the mixture further comprises a DNase activating agent.

6. The method of claim 5 wherein the DNase activating agent is sodium azide.

7. The method of claim 1 wherein the mixture of step (a) is maintained at 30-45°C for at least 1 hour.

8. The method of claim 1 further comprising the step of monitoring the nucleic acid degradation.

9. The method of claim 1 further comprising deactivating the DNase present in admixture with the purified gellan.

10. The method of claim 9 wherein the DNase is deactivated by heating the DNase in admixture with the purified gellan to an inactivating temperature in excess of 50°C.

11. The method of claim 1 wherein the DNase is DNase 1.

12. The method of claim 1 further comprising adding boric acid to the gellan or the purified gellan.

13. The method of claim 1 further comprising adding imidazole to the gellan or the purified gellan.

14. The method of claim 1 further comprising adding a size-separation property modifying polymer to the gellan or the purified gellan.

15. The method of claim 14 wherein the size-separation property modifying polymer is poly(ethylene oxide).

16. A gellan composition prepared by the method of any of claims 1-15.

17. A gellan composition comprising water and gellan, the composition containing either no nucleic acid or nucleic acid at a concentration of less than 10 ppm based on the weight of the gellan.

18. The gellan composition of claim 17 that contains either no nucleic acid or nucleic acid at a concentration of less than 5 ppm based on the weight of the gellan.

19. The gellan composition of claim 17 that contains either no nucleic acid or nucleic acid at a concentration of less than 1 ppm based on the weight of the gellan.

20. A composition suitable for use in preparing an electrophoresis medium, comprising:

(a) gellan; and

(b) either no nucleic acid or nucleic acid at a concentration of less than 10 ppm nucleic acid, based on the weight of gellan.

21. The composition of claim 20 further comprising a size-separation property modifying polymer.

22. The composition of claim 21 wherein the size-separation property modifying polymer is poly(ethylene oxide).

23 The composition of claim 20 further comprising a buffer composition suitable for maintaining said composition at a pH of 5-9.

24. The composition of claim 23 wherein the buffer comprises imidazole or a salt thereof and boric acid or a salt thereof.

25. The composition of claim 20 further comprising EDTA or a salt thereof.

26. The composition of claim 20 further comprising a size-separation property modifying polymer, imidazole or a salt thereof, boric acid or a salt thereof, and EDTA or a salt thereof.

27. The composition of claim 20 further comprising a cross-linking agent.

28. The composition of claim 27 wherein the cross-linking agent is cystamine.

29. A kit comprising:

(a) a matrix composition comprising gellan and nucleic acid at a concentration of less than 10 ppm based on the weight of the gellan;

(b) buffer; and

(c) cross linking agent.

30. The kit of claim 29 wherein the nucleic acid is present in the matrix composition at a concentration of less than 5 ppm based on the weight of the gellan.

31. The kit of claim 29 wherein the matrix composition further comprises a size-separation property modifying polymer.

32. The kit of claim 29 wherein the size-separation property modifying polymer is poly(ethylene oxide).

33. The kit of claim 29 further comprising a size-separation property modifying polymer.

34. The kit of claim 33 wherein the size-separation property modifying polymer is poly(alkyleneoxide).

35. The kit of claim 29 wherein the matrix composition further comprises boric acid or a salt thereof.

36. The kit of claim 29 wherein the matrix composition further comprises imidazole or a salt thereof.

37. The kit of claim 29 wherein the matrix composition has a pH between 6.5 and 8.5.

38. The kit of claim 29 wherein the matrix composition further comprises a DNA stain.

39. The kit of claim 29 wherein the buffer comprises imidazole or a salt thereof.

40. The kit of claim 29 wherein the buffer comprises boric acid or a salt thereof.

41. The kit of claim 29 wherein the buffer comprises imidazole or a salt thereof, and boric acid or a salt thereof.

42. The kit of claim 29 wherein the cross linking agent is cystamine.

43. A method of performing electrophoresis comprising

(1) forming an electrophoresis medium by combining ingredients comprising:

(a) a matrix composition comprising gellan, nucleic acid at a concentration of less than 10 ppm based on the weight of the gellan, and size-separation property modifying polymer;

(b) buffer; and

(c) cross linking agent; and

(2) applying an electric field across the medium.

44. An electrophoresis apparatus comprising:

(a) a cross linked matrix formed by combining gellan, cross linking agent, nucleic acid at a concentration of less than 10 ppm based on the weight of the gellan, buffer, and size-separation property modifying polymer; and

(b) an apparatus for exposing said cross linked matrix to an electric field.

45. A method for recovering a biological material, comprising:

(a) adding a mixture comprising a biological material to a cross linked electrophoresis medium, the medium being formed by a method comprising combining a cross linking agent and gellan contaminated with less than 10 ppm nucleic acid based on the weight of the gellan;

(b) exposing the medium to an electric field to separate in said medium said biological material from other components in the mixture;

(c) removing a zone of the medium containing the biological material from the medium;

(d) exposing the removed zone to an agent that reverses the cross linking of the medium, to provide liquefied electrophoresis medium; and

(e) separating the biological material from the liquefied electrophoresis medium, thereby recovering the biological material.

46. The method of claim 45 wherein the cross linking agent is a divalent metal cation and the agent that reverses the cross linking is a chelating agent.

47. The method of claim 45 wherein the cross linking agent is a diamine and the agent that reverses the cross linking is pH modifying agent.

48. The method of claim 45 wherein the cross linking agent comprises a disulfide bond, and the agent that reverses the cross linking is a reducing agent.

49. A composition comprising water, imidazole or a salt thereof, and boric acid or a salt thereof.

50. The composition of claim 49 having a pH between 5 and 9.

51. The composition of claim 49 having an imidazole or salt thereof concentration between 10 and 100 mM.

52. The composition of claim 49 having a boric acid or salt thereof concentration between 50 and 500 mM.

53. The composition of claim 49 having an imidazole or salt thereof concentration between 20 and 60 mM and a boric acid or salt thereof concentration between 100 and 300 mM.

54. The composition of claim 49 further comprising EDTA or a salt thereof.